# DERMAPTERA AND ORTHOPTERA FROM THE STATE OF SINALOA, MEXICO

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## Part I

### Dermaptera and Non-saltatorial Orthoptera

The collections here recorded were made in the State of Sinaloa, by Mr. J. A. Kusche, on two different trips, which were undertaken with the general collecting of insects in view. In 1916, his efforts were confined to Mazatlan, where little could be done, due to the disorders which were occurring everywhere outside that city. In 1918, however, several localities were visited, and during a stay at Venvidio, from June 16 to September 2, probably one of the largest and most representative series ever taken at a single locality in Mexico was secured.

In the present paper six hundred and sixty specimens are recorded, representing twenty-nine genera and thirty-seven species, of which one genus and eleven species were undescribed.

The distribution of these species, or of their nearest affinities, is noted in the following table.

Dermaptera

| | |
|---|---|
| *Euborellia annulipes* (Lucas) | Cosmopolitan. |
| *Vostox brunneipennis* (Serville) | Northward and southward. |
| **Prosparatta sinaloae* new species | Related species southward. |
| *Doru lineare* (Eschscholtz) | Extreme southwestern U. S. to South America. |

Orthoptera

Blattidae

| | |
|---|---|
| **Euthlastoblatta grata* new species | Extreme southern Texas to Panama. |
| *Latiblattella lucifrons* Hebard | Extreme southwestern U. S. to Sinaloa. |
| *Latiblattella picturata* Hebard | Southern Baja California, Sonora and Sinaloa. |
| **Ischnoptera bicornuta* new species | Related species southward. |
| **Cahita nahua* (Saussure) | Southward, but only in Mexico. |
| *Pseudomops septentrionalis* Hebard | Southern Texas and northern Mexico. |
| **Nyctibora tetrasticta* new species | Related species southward. |
| *Periplaneta americana* (Linnaeus) | Cosmopolitan. |

| | |
|---|---|
| *Periplaneta australasiae* (Fabricius) | Cosmopolitan. |
| *Pycnoscelus surinamensis* (Linnaeus) | Circumtropical and subtropical. |
| *Panchlora cubensis* Saussure | Extreme southern Texas to South America. |
| **Panchlora cahita* new species | Related species southward. |
| *Panchlora montezuma* Saussure and Zehntner | Related species southward. |
| *Nauphoeta cinerea* (Olivier) | Circumtropical. |
| **Holocompsa scotaea* new species | Related species tropical North American. |
| *Compsodes schwarzi* (Caudell) | Extreme southwestern U. S. to Sinaloa. |
| **Caloblatta lampra* new species | Related species southward. |
| **Chorisoneura anisoura* new species | Related species southward. |
| **Chorisoneura flavipennis* Saussure and Zehntner. | Sinaloa southward. |

MANTIDAE

| | |
|---|---|
| **Mantoida maya* Saussure and Zehntner | Tropical North America and northern South America. |
| **Yersinia mexicana* (Saussure) | Southward, but only in Mexico. |
| **Oligonicella mexicana* (Saussure and Zehntner) | Sinaloa, southward to Guatemala. |
| **Oligonicella tessellata* (Saussure and Zehntner) | Southward, but only in Mexico. |
| **Mellicra atopogamia* Saussure | Sinaloa, southward to Guatemala. |
| *Stagmomantis tolteca* (Saussure) | Mexico, southward. |
| *Stagmomantis limbata* (Hahn) | Southwestern U. S. to Sinaloa. |
| *Stagmomantis colorata* new species | Related species northward. |
| **Acanthops bidens* new species | Related species southward. |
| *Phyllovates chlorophaea* (Blanchard) | Extreme southwestern U. S. to Panama. |
| **Vates pectinata* Saussure | Tropical Mexico. |

PHASMIDAE

| | |
|---|---|
| **Diapheromera erythropleura* new species | Related species southward, but only in Mexico. |
| **Bostra actolus* (Westwood) | Southward, but only in Mexico. |

It would appear that Sinaloa is the northernmost area reached on the west coast of Mexico by many of the tropical forms. Collections from Sonora, the Gulf of California and Baja California recently examined, did not include any of the nineteen such forms indicated by an asterisk in the above list.

Excluding the forms carried by commerce and those having a distribution extending both northward and southward, we find that, in the present list, only five species previously known only from north of Sinaloa or related to species there found.

Of the thirty-one species recorded, other than those carried by commerce, eleven are at present known only from this region, while three or more are known elsewhere only from extreme southern Baja California and southern Sonora.

The material here recorded, unless otherwise stated, is in the author's collection.

## DERMAPTERA

### Labiduridae

**Euborellia annulipes** (Lucas)

1847. *Forficelisa annulipes* Lucas, Bull. Soc. Ent. France, (2), v, p. lxxxiv. [Jardin des Plantes, Paris, (probably introduced from North America).]

Las Mochis, II, 2, 1918, 1 ♂, 2 ♀. Mazatlan, XII, 16 to 31, 1916, 9 ♂, 10 ♀, 8 juv.

### Labiidae

**Vostox brunneipennis** (Serville)

1839. *Psalidophora brunneipennis* Serville, Hist. Nat. Ins., Orth., p. 30. [Philadelphia, Pa.]

Venvidio, VI, 30 to VIII, 3, 1918, 1 ♀.[1]

This specimen differs from the series before us, from the United States, in having the tegminal shoulders very slightly and inconspicuously paler than the other portions[2], and the internal faces of the forceps strongly hirsute.

**Prosparatta sinaloae** new species (Plate VI, figures 1, 2 and 3.)

This insect represents a simplified type, showing least specialization of the species of the genus. In its slender form it agrees with the genotype, *P. incerta* (Borelli), the other species *P. humilis* Hebard and *P. flavipennula* (Rehn) being distinctly more robust.

[1] In addition we have examined the following material:

Cordoba, Vera Cruz, II, 24, 1908, (F. Knab), 2 ♂, [U. S. N. M.]. These specimens differ, from the other material at hand, in having the forceps with the usual median tooth situated at end of proximal third of the internal margin heavier, and in being furnished with a much smaller but distinct dorsal tooth at base of distal third. The specimens are richly colored.

[2] See discussion of this feature for the species, Trans. Amer. Ent. Soc., XLIII, p. 307, (1917).

The eyes are comparatively large, equalling the cheeks in length. In the male the short pygidium with minute lateral projections and truncate apex, and the forceps unarmed except of a minute proximo-internal tooth, are distinctive. In general form of pygidium nearest agreement with *humilis* is shown, that species, however, having the pygidium without lateral projections and with apex much narrower. The same is true of the female forceps also, in which, however, the flange of the internal margin, conspicuous in *incerta* and *flavipennula*, has become subobsolete.

*Type.*—♂; Venvidio, Sinaloa, Mexico. June 30 to July 3, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 754.]

Size medium small of the genus; form moderately depressed, slender. Head with occiput flattened but not impressed, cheeks as long as eyes. Antennae with first segment large, broadening just before median point; second minute; third slightly shorter than first;[3] fourth decidedly shorter; succeeding segments increasing strongly and regularly in length distad. Pronotum[4] distinctly longer than broad, smooth, with a medio-longitudinal linear sulcus very feebly indicated; rectangulate cephalad, broadly convex truncate caudad; lateral margins straight, showing an almost imperceptible divergence caudad; prozona tumid, this becoming very weak caudad; metazona deplanate. Tegmina smooth, with distal margin truncate, weakly oblique; wings with exposed area nearly one-half as long as tegmen. Abdomen with glands very weakly developed; surface of abdomen polished, almost smooth, rugulose condition subobsolete. Ultimate tergite smooth, length slightly less than half its width, showing a weak triangular depression meso-distad, caudal margin transverse with a very feeble concavity about the pygidium. Pygidium small, about as wide as long, declivent with surface convex, lateral margins very weakly convergent, terminating on each side in a minute point, beyond more strongly convergent and weakly convex to median third of this portion which is truncate. Forceps parallel to their apices which are incurved; showing a slight flattened production of dorso-internal margin at end of proximal two-fifths, the shaft, from that point distad, more decidedly flattened distad than proximad; internal surface granulate except distad, with a minute proximal tooth mesad above the median point of the pygidium on each side. Penultimate sternite ample, less than twice as broad as long, with latero-caudal angles broadly rounded and distal margin transverse, fringed with closely placed, short, microscopic hairs. Caudal metatarsus as long as last joint, hairy ventrad with a fringe of lamellae on ventro-internal margin.

[3] This is also true of the paratypes of *humilis* in the author's collection.

[4] This is taken from the allotype, as the pronotum is deformed in the type.

*Allotype.*— ♀ ; same data as type. [Hebard Collection.]

Agrees closely with male, differing only as follows. Pygidium small, simple, triangular with apex rounded. Forceps more nearly approximated, shorter and very slightly heavier, armed at base with a projection twice as broad as long, the distal margin of which is straight. Shaft of forceps straight, much as in *incerta*, but without a distinct flange, the internal margin irregular, sublamellate proximad, this disappearing evenly into the margin of the distal curvature, as in *humilis*, but even more weakly indicated. Penultimate sternite with distal margin evenly convex, fringed with closely placed, short, microscopic hairs.

Entire insect glabrous. Head, pronotum and tegmina very dark chestnut brown, the head darkest. Mouthparts and antennae proximad buckthorn brown, remaining portions of antennae becoming darker, dresden brown. Exposed portions of wings antimony yellow, rather broadly suffused along sutural margin with dark chestnut brown. Abdomen dorsad bright tawny (*type*), or light ochraceous-tawny with an orange tinge (*allotype*), shading to blackish chestnut brown laterad. Forceps russet. Limbs immaculate, rich antimony yellow. Ventral surface the same, becoming russet on all but proximal portion of abdomen.

Length of body, ♂ 9, ♀ —[5]; length of pronotum, ♂ 1.2, ♀ 1.3; width of pronotum, ♂ 1, ♀ 1.1; length of tegmen, ♂ 2.3, ♀ 2.3; length of forceps, ♂ 2.8, ♀ 2.1 mm.

The species is known from the described pair.

### Forficulidae

**Doru lineare** (Eschscholtz)

1882. *Forficula linearis* Eschscholtz, Entomogr., p. 81. [♀; Santa Catharina, Brazil.]

Mazatlan, XII, 28, 1916, 2 ♂, 4 ♀. Villa Union, IX, 27, 1918, 11 ♂, 3 ♀. Rosario, 1 ♂, 6 ♀. Venvidio, VI, 30 to IX, 2, 1918, 12 ♂, 20 ♀.

The extremes in size of the present series are: length of body, ♂ 10.9 to 13.8, ♀ 8.4 to 12.4; length of forceps, ♂ 3.8 to 6.3, ♀ 3 to 3.3 mm. All have fully developed wings.

## ORTHOPTERA

### Blattidae

#### pseudomopinae

**Euthlastoblatta grata** new species (Plate VI, figure 4.)

This beautiful insect closely resembles *E. abortiva* (Caudell), differing in the very much smaller size and form of the male subgenital plate, which is more nearly symmetrical, with meso-

[5] Of the same general size as the male, this specimen measures 11.7 mm. in length, as the abdomen has been pressed out greatly.

distal angulate emargination less decided, and styles more slender and without as numerous or as stout hairs as are found in that species.

*Type.*—♂; Venvidio, Sinaloa, Mexico. July 28 to August 1, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 756.]

Size very small for the genus, smaller than *E. orizabae* (Saussure); form moderately slender. Interocular space broad, very slightly narrower than that between the antennal sockets. Maxillary palpi with fourth joint very slightly shorter than third, fifth slightly shorter than fourth. Pronotum with surface weakly convex, showing a faint discal flattening caudad; outline symmetrically rounded-trapezoidal, greatest width meso-caudad. Tegmina and wings fully developed, extremely delicate in structure, numerous discoidal sectors of the former oblique.[6] Supra-anal plate[7] very strongly transverse, free margin showing a broad convexity with median emargination feebly suggested. Paired plate beneath supra-anal plate nearly symmetrical, lamellate laterad, suddenly enlarged mesad. Concealed genitalia complex.[8] Subgenital plate with surface moderately convex except before the styles, where it is weakly concave; lateral margins broadly concave and weakly oblique to styles, between these the distal margin is truncate in ventral aspect, but angulate at slightly more than a rectangle in caudal aspect. Styles situated on apices thus formed, very small rounded processes about twice as long as broad, unarmed but supplied with hairs. Limb armament as described for the genus,[9] except that the ventro-caudal margin of the cephalic femora has a median as well as a distal spine.

Pronotal marking as in *abortiva*,[10] with caudal margin and cephalic portion of disk blackish brown, intervening band and margin of discal marking buffy, lateral portions transparent, faintly tinged with brown. Tegmina very delicately tinged with sudan brown, paling laterad. Head brussels brown paling on face, there obscurely mottled with buffy. Palpi, underparts and limbs ochraceous-buff, the abdomen weakly suffused with brown distad.

Length of body, 6.8; length of pronotum, 2; width of pronotum, 2.6; length of tegmen, 7.3; width of tegmen, 2.5 mm.

The type of this striking but diminutive species is unique.

[6] See generic description for other characters of venation. Mem. Amer. Ent. Soc., no. 2, p. 26, (1917).

[7] The dorsal surface of the abdomen can not safely be examined in this unique specimen; it is probably unspecialized as in *abortiva*.

[8] A whorl of spiniform hairs, suggesting those found in *abortiva*, though differently arranged, is visible. The genitalia can not be examined thoroughly in this specimen.

[9] In *orizabae* a very similar condition is shown, but in the Compsa Group of *Euthlastoblatta* a decided difference occurs, the ventro-cephalic margin of the cephalic femora showing a strong tendency toward the condition termed type "A."

[10] Figured, Mem. Amer. Ent. Soc., no. 2, pl. 1, figs. 1 and 7, (1917).

**Latiblattella lucifrons** Hebard

1917. *Latiblattella lucifrons* Hebard, Mem. Amer. Ent. Soc., no. 2, p. 43, pl. 1, figs. 18 to 23. [♂, ♀; Santa Rita, Huachuca and Baboquivari Mountains, Arizona.]

Venvidio, VI, 24, to IX, 2, 1918, 31 ♂, 8 ♀, 2 juv.

We have recently recorded other Mexican material of the species,[11] from San José del Cabo, Baja California and Huejotitlan, Jalisco. We are still unable to locate *L. dilatata* (Saussure) and *L. chichimeca* (Saussure), the insufficient descriptions of these species, as we already have stated, leaving us in no doubt as to their generic positions, but in complete ignorance as far as the most important specific diagnostic characters are concerned. Examination of the types and material from central and central eastern Mexico can alone clear up the obscurity. It appears from the present material, however, that *lucifrons* is closely related. In our original discussion we assigned to *dilatata* a female from Baja California, which we now believe represents a depauperate specimen of the species recognized as *lucifrons*. We were in even more serious error at that time in comparing with males of that species, specimens of the same sex of *L. picturata*, a species which we have recently described from Baja California. Hence our original comparisons for *lucifrons* are worthless.

*Measurements (in millimeters)*

| ♂ | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegmen |
|---|---|---|---|---|---|
| Venvidio, Sinaloa (31) | 13–14.8 | 3.3–3.8 | 4.9–5.2 | 12.9–14.6 | 4–4.4 |
| Huejotitlan, Jalisco. | 13.7 | 3.7 | 5.1 | 15 | 4.5 |
| ♀ | | | | | |
| San José del Cabo, Baja California. | 10.2 | 3.3 | 5.1 | 9 | 3.6 |
| Venvidio, Sinaloa (8) | 12.4–14.8 | 3.9–4.2 | 5.7–5.9 | 10.6–11.2 | 4.3–4.4 |

The smallest female shows close agreement with the type female of *L. dilatata* (Saussure) in measurements, the largest male similarly showing as close agreement with the measurements given for the male type of *L. chichimeca* (Saussure and Zehntner).

[11] Trans. Amer. Ent. Soc., XLVII, p. 203, (1921).

In the present series the majority have the head pale, many with a broad band of brown between the ocelli, this expanding in intensive examples and in the maximum intensification shown the head is dark brown, except for the pale buffy occiput. The pronotal disk is buffy, often with a few microscopic dots of pale brown, these dots darker and more numerous in the maximum intensive condition, but never conspicuous.

**Latiblattella picturata** Hebard

1921. *Latiblattella picturata* Hebard, Trans. Amer. Ent. Soc., XLVII, p. 203, pl. XIII, figs. 2 to 8. [♂, ♀: San Jorge, Sierra el Taste and San Josè del Cabo, Baja California, Mexico; Venvidio, Sinaloa, Mexico.]

Venvidio, VI, 16, 1918, 1 ♂, 1 juv. ♂.

This species, apparently nearest in relationship to *L. zapoteca* (Saussure), belongs to that section of the genus including species which are beautifully and strikingly marked.

**Neoblattella sinaloae** new species. (Plate VI, figures 5 and 6.)

This species, known only from the male sex, is a small and inconspicuous type, which we place after *N. fratercula* Hebard. It does not appear, however, to show close affinity to any of the species known to us.

The tegmina are very slightly more coriaceous than in *fratercula*, with the numerous cross-veinlets so delicate and colorless that they can not be seen by the naked eye. The subgenital plate is distinctive, quadratic emarginate on each side, with heavy, armed, similar cerci and median portion produced in a large, symmetrical, unspecialized pentagonal patelliform projection.

*Type.*— ♂; Venvidio, Sinaloa, Mexico. July 20 to 22, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 758.]

Size small for the genus, form moderately slender. Interocular space four-fifths as wide as that between the antennal sockets; ocellar spots moderately large and distinct. Maxillary palpi elongate, fifth joint three-quarters as long as fourth, obliquely truncate in distal two-thirds, fourth joint nearly as long as third. Pronotum weakly convex, greatest width meso-caudad. Tegmina and wings fully developed, extending well beyond cercal apices. Tegmina with (six) longitudinal discoidal sectors, cross-veinlets subobsolete, except in area of dextral tegmen concealed when at rest. Wings with (six) costal veins rather heavily clubbed distad, ulnar vein with two branches, intercalated triangle moderately well developed. Dorsal surface of abdomen unspecialized. Supra-anal plate strongly transverse, very broadly and

weakly triangularly produced and broadly and bluntly bilobate. Subgenital plate with lateral portions moderately ascendant, abruptly emarginate in such a way that a large square emargination is left on each side of the mesal produced portion, the angles of which are rounded, projecting angles of lateral portions thus formed very bluntly acute-angulate; meso-distal portion of plate produced an equal distance caudad, three-fifths as long as broad, its lateral margins straight and very weakly convergent, its distal margin very broadly rounded obtuse-angulate. Styles situated at bases of the square lateral emarginations, similar, heavy, cylindrical, twice as long as broad with apices bluntly rounded, extending as far caudad as median and lateral portions of the plate; ventral surfaces of styles subchitinous and weakly concave, dorsal surfaces well supplied with minute but stout spines from base to apex. Lateral portions of subgenital plate adjacent to these styles somewhat thickened and hairy on both internal and external surfaces. Sinistrad, from the soft integument within the anal chamber, projects distad an elongate, slightly curved, chitinous spike, with a smaller, similar spine, also directed distad, at its base. Limbs and their armament, pulvilli and arolia as normal for *Neoblattella*. Tarsal claws symmetrical: flange, usual in the genus, very weakly developed and marginal teeth very minute, microscopic, subobsolete.

General coloration translucent ochraceous-buff. Lateral margins of pronotum and all of tegmina weakly transparent, tinged with ochraceous-buff more strongly than in *fratercula*. Disk of pronotum ochraceous-buff with a picturing of prout's brown, which is not complex, but is distinct. Wings hyaline with a slight iridescence, very faintly tinged with ochraceous-buff, veins and distal portion of anterior field more strongly so, clubs of costal veins opaque ochraceous-buff. Head ochraceous-buff, with a broad interocular band of dark prout's brown, four suffused spots of the same between the ocelli, four more in an arcuate line between the antennal sockets and one on each side ventro-mesad of the antennal sockets. Antennae ochraceous-buff with first and second joints marked with a suffusion of prout's brown. Palpi, underparts and limbs ochraceous-buff, the latter with flecks of prout's brown at bases of the heavier spines. Dorsal surface of abdomen mottled ochraceous-buff and warm buff. Cerci ochraceous-buff, all of the segments ventrad and three meso-distal segments dorsad, toward their internal margins, showing suffusions of prout's brown.

Length of body, 9.5; length of pronotum, 2.8; width of pronotum, 3.7; length of tegmen, 10.5; width of tegmen, 3.3 mm.

The type is unique.

**Ischnoptera bicornuta** new species (Plate VI, figures 7, 8 and 9.)

This species belongs to the group including *I. tolteca* Saussure. Compared with a pair from the National Museum belonging to that species, from Santa Lucrecia, Vera Cruz, *bicornis* is found to differ in both sexes in the pronotal color pattern, the

pale lateral margins not invading the more extensive dark area latero-caudad. In the male sex the supra-anal plate is subchitinous mesad instead of meso-distad, roundly and evenly triangularly produced, with hairs and stout spines along the free margin; the specialization at the bases of the cerci is distinctive, while the styles are smaller, more slender and less heavily armed. In the female the supra-anal plate is triangularly produced with apex bluntly rounded.

*Type.*—♂; Venvidio, Sinaloa, Mexico. September 2, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 759.]

Size small, form moderately slender, much as in *tolteca*. Interocular space slightly over half that between the antennal sockets. Ocelli large and distinct but with flattened surfaces of ocellar areas forming a very blunt angle with the interocellar area. Maxillary palpi short, fifth and third joints of equal length, appreciably longer than fourth. Antennae, palpi, limbs and ventral surface decidedly hairy, particularly the fifth joint of the maxillary palpi. Latero-caudal sulci of pronotal disk distinct and broad. Tegmina and wings extending well beyond cercal apices. Wings with a moderately well developed intercalated triangle. Dorsal surface of abdomen specialized as is characteristic of the genus. Eighth tergite with caudal margin rather strongly concave. Supra-anal plate subchitinous in median section, triangularly produced between cerci with lateral margins broadly convex and apex rather sharply rounded, free margin well supplied with elongate hairs but entirely lacking minute spines. From inside the base of each cercus a large horn-like chitinous process is directed meso-caudad, the sinistral gently curved dorsad, the dextral heavier and longer, gently curved mesad and then very weakly ventrad.[12] Subgenital plate large, extending caudad beyond apex of supra-anal plate, convex with sides gradually reflexed, but broadly and shallowly concave before the styles. Styles situated slightly sinistrad of the median point, separated by a distance equal to the width of one of them, moderately stout, both armed in distal half of dorsal surface with a few minute, stout spines; sinistral style very weakly curved, tapering to its blunt apex, nearly four times as long as its proximal width; dextral style slightly longer, four times as long as its basal width, its distal portion very slightly thickened and bent weakly ventrad. Limbs, their armament, pulvilli, tarsal claws and arolia as characteristic of the genus.

*Allotype.*— ♀; same data as type. [Hebard Collection.]

Very similar to male, but showing the following differences. Interocular space three-quarters that between the antennal sockets. Dorsal surface of abdomen unspecialized. Organs of flight slightly more ample. Supra-anal plate triangularly produced between cerci, with lateral margins scarcely convex and apex rather sharply rounded, though not as sharply as in male. Paired

[12] These processes of the concealed genitalia appear to be normally visible from above, lying outside the supra-anal plate.

plate beneath supra-anal plate formed into two large, lamellate, chitinous and symmetrical valves. Subgenital plate evenly convex, with free margin evenly and broadly convex, except before the cerci, where a very weak concavity is indicated.

Pronotum shining, cephalic margin narrowly and lateral margins more broadly opaque, warm buff, remaining portions very dark chestnut brown, paling along caudal margin to hazel. The pale marginal band does not invade the dark area latero-caudad. Head blackish chestnut brown; ocelli and palpi warm buff, the latter with all but proximal portion of distal joint suffused with prout's brown; mouthparts and two proximal joints of antennae ochraceous-buff, remaining portions of the latter prout's brown. Tegmina weakly transparent, tawny, paling to buckthorn brown distad and along costal margin, marginal field transparent light buff, the mediastine vein distinct and brown to slightly beyond its median point. Wings transparent, very faintly tinged with cinnamon brown, veins cinnamon brown or paler, distal portions of costal veins buffy (this including the entire area of the costal veins in the specimen from Baja California). Remaining portions of dorsal surface buffy; mesonotum, metanotum and distal portion of abdomen washed with brown. Cerci mummy brown. Ventral surface and limbs ochraceous-buff, the abdomen tinged with tawny,[13] the coxae each with a suffused spot of prout's brown proximad, the spines tawny.

Length of body,[14] ♂ 11.8 to 11, ♀ 11.7 to 11; length of pronotum, ♂ 3 to 2.9, ♀ 3.25 to 3.1; width of pronotum, ♂ 4 to 3.8, ♀ 4.15 to 4.1; length of tegmen, ♂ 12.3 to 12.2, ♀ 12.7 to 12.6; width of tegmen, ♂ 3.8 to 3.8, ♀ 4 to 4 mm.

In addition to the described pair, a paratypic male from Villa Union, Sinaloa, taken by J. A. Kusche, September 2, 1918, and a female from San José del Cabo, Baja California, have been examined.

### CAHITA[15] new genus

This genus, known to us only from the male sex, in structure and coloration suggests the genus *Symploce*, the form, however, being even broader. Further examination, shows it to be a very distinct entity, remarkable for the distinctive palpi, ventro-cephalic margin of the cephalic femora armed as in *Ischnoptera* but with only two heavy distal spines, very weak production

[13] In some specimens deepening to russet distad.

[14] The measurements for the male type are given first, a male paratype from Villa Union second. For the female sex the allotype is given first, a female from San José del Cabo second.

[15] A vigorous Sonoran Branch of the Uto-Aztecan Indians, inhabiting the region in which this species occurs.

caudad of the pronotum, tegmina with unbranched discoidal vein and longitudinal discoidal sectors, wings with unbranched discoidal and straight ulnar vein, dorsal surface of the abdomen with median segment specialized mesad and ninth tergite with produced latero-caudal angles, nearly symmetrical male subgenital plate with simple, similar styles but armed distal margin, large pulvilli and arolia and very strongly asymmetrical tarsal claws.

In linear arrangement we place this genus after *Symploce* in the Group Ischnopterae.

*Genotype.—Cahita nahua* (Saussure).

*Generic description.*—Size medium for the group, form broad, texture moderately delicate, in this latter respect as in *Symploce*. Interocular space moderately broad, ocellar areas weakly defined. Maxillary palpi short and heavy, fifth joint specialized. Pronotum broad, evenly and weakly convex, caudal margin broadly rounded obtuse-angulate produced, point of greatest width meso-caudad. Tegmina and wings fully developed in both sexes. Tegmina moderately broad, discoidal vein unbranched, discoidal sectors (nine to ten) longitudinal. Wings with mediastine vein extending to beyond median point, discoidal vein unbranched, costal veins slightly thickened distad, not clubbed, ulnar vein straight with (four) incomplete and (five) complete branches, intercalated triangle very small. Abdomen of male with median segment specialized and ninth tergite with latero-caudal angles decidedly produced. Supra-anal plate triangularly produced in both sexes. Subgenital plate of male symmetrical, with simple similar styles, distal margin armed. Limbs rather stout for the Group. Cephalic femora with ventro-cephalic margin armed with (four or five) heavy proximal spines, succeeded by a scattered, irregularly placed row of minute, chaetiform spines, terminated by two elongate, heavy spines, of which the more distal is the longer (these latter sometimes absent). Other ventral femoral margins supplied with elongate, heavy spines. Tarsi comparatively stout and covered with minute but coarse hairs, first four joints supplied with large pulvilli distad. Very large arolia present between the stout, unspecialized, strongly asymmetrical tarsal claws.

**Cahita nahua** (Saussure) (Plate VI, figures 10, 11 and 12.)

1868. *Ischnoptera nahua* Saussure, Rev. et Mag. de Zool., (2), XX, p. 356. [♂, ♀; [Orizaba, Vera Cruz,] Mexico.]

Venvidio, IX, 2, 1918, 1 ♂.[16]

The present material differs only from the more detailed description given by Saussure in 1870, in having the head immaculate, lacking "une grande tache brune sur le front entre les antennes."

As the insect is one of the most distinctive forms of the Group Ischnopterae, we note the following additional features for the male. Interocular space slightly less than half as broad as that between the antennal sockets, showing subobsolete impression. Maxillary palpi with third joint three-quarters as long as fifth; fourth half as long as third, expanding strongly, so that the oblique distal and ventral margins are equal in length; fifth joint very large, apex bluntly rounded, entire distal surface deeply concave, fringed along the dorsal margin with hairs. Median segment with two meso-cephalic adjacent tufts of agglutinated hairs. Plate at base of each cercus produced in a moderately curved spine, the sinistral reaching to near the median point of the anal chamber, the dextral decidedly shorter. Subgenital plate with lateral portions well supplied with fine hairs both internally and externally, margin of distal portion armed with an even fringe of closely placed, elongate, chaetiform spines, directed dorsad, and having a brush-like appearance as these spines are partially agglutinated.

*Measurements (in millimeters)*

| | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegmen |
|---|---|---|---|---|---|
| Motzorongo, Vera Cruz | 12.1 | 3.1 | 4.2 | 11.8 | 3.8 |
| Motzorongo, Vera Cruz | 12.5 | 3.1 | 4.3 | 11.8 | 3.7 |
| Cuernavaca, Morelos | 14.7 | 3.8 | 5 | 14 | 4.6 |
| Venvidio, Sinaloa | 14.3 | 3.8 | 5.2 | 14.8 | 4.8 |

One of the adults and the immature individual from the State of Vera Cruz lack the heavy distal spines of the ventro-cephalic margin of the cephalic femora. We are unable to account for this, which though apparently having neither generic or specific significance, constitutes a differentiation of a character usually indicating generic distinction.

[16] There are also before us two males from Motzorongo, Vera Cruz, taken in February 1892, by L. Bruner, in the author's collection; one immature male from Vera Cruz, taken by the Rev. T. Heyde in the same collection, and one male from Cuernavaca, Morelos, taken in November, 1905, by Wm. Schaus, in the United States National Museum.

This is the only species of the Group Ischnopterae known to us, where less than three heavy distal spines on the ventro-cephalic margin of the cephalic femora occur. Such a condition is found in about half of the genera of the Group Blattellae. In none of the other American species of the Ischopterae, with which we are familiar, are the tarsal claws asymmetrical. This occurs in a very few genera of the Blattellae.

**Pseudomops septentrionalis** Hebard

1917. *Pseudomops septentrionalis* Hebard, Mem. Amer. Ent. Soc., no. 2, p. 156, pl. VI, figs. 5 to 8. [♂, ♀; Brownsville, Texas.[17]]

Venvidio, VI, 30 to IX, 2, 1918, 18 ♂, 3 ♀.

The present series shows very little color variation. In some the limbs, however, are much darker than in others. The pronotum shows a difference from the usual Texan material in having the lateral and cephalic margins usually very slightly and inconspicuously paler than the adjacent portions, in a few specimens only, is some approach to the Texan series shown in this feature of coloration.

Very close agreement is shown by the general structure, but in one feature of the concealed genitalia we find, in certain individuals only, an extraordinary variation. In this species the paired plate beneath the supra-anal plate has the sinistral portion produced in a large, irregular, lobate patelliform projection, directed mesad, with surface armed with a few minute teeth meso-distad; the dextral portion is produced in a heavier, irregularly rounded patelliform projection, bearing mesad on its ventral surface a large cylindrical process, which, directed ventro-sinistrad, curves weakly sinistrad, tapering to its acute apex.[18] In the Texan material examined, as in individuals of the present series, this is the only process developed on this plate; in other specimens from Venvidio the plate, on the same margin but nearer the base of the dextral style, is produced in another, decidedly smaller, but generally similar process. Differentiation of the concealed genitalia of similar degree, we believe may in most genera be considered as a criterion of full specific differential value. In the present case, however, it appears almost certain that the difference noted is attributable wholly to individual variation.

[17] Material from fourteen Texan localities and from Saltillo, Coahuila, and San José, Tamaulipas, is also recorded.

[18] In our original diagnosis we called this a genital hook, stating that it curved inward, i. e. toward the longitudinal axis of the body.

We have of recent years been giving much attention to the concealed genitalia of the Blattidae and find that in these organs chitinous parts are developed, which frequently afford characters of full specific diagnostic value. These chitinous parts very often are as constant as the specialized portions of the subgenital plate, occasionally they are seen to develop slight individual differences in contour. The present case, however, is the first we have encountered, where a distinct difference is found which we feel obliged to look upon as an individual variation.

NYCTIBORINAE

**Nyctibora tetrasticta** new species (Plate VI, figures 13, 14 and 15.)

This species agrees with *N. truncata* Saussure and Zehntner[20] in being flightless, the tegmina decidedly reduced, the wings represented by vestigial pads. It differs from that species in being somewhat larger, the male sex showing conspicuous abdominal markings.

*Type.*—♂; Venvidio, Sinaloa, Mexico. July 6 to 12, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 760.]

Size small for this genus of large species, slightly larger than *truncata* and *N. azteca* Saussure and Zehntner; surface glabrous, but, thickly supplied with minute, microscopic, procumbent hairs springing from microscopic impressed punctulae. Head elongate and flattened; interocular space narrow, less than one-quarter width between antennal sockets, interocular area flattened, ocellar spots moderately large, not as large or with ocellar areas weakly defined as in *azteca*. Maxillary palpi with fifth joint enlarged, slightly longer than third, fourth half as long as fifth. Pronotum evenly convex, point of greatest width at latero-caudal angles, cephalic margin nearly semicircular to the rounded rectangulate latero-caudal angles, between these the caudal margin is nearly transverse, showing very bread, rounded obtuse-angulation. Tegmina overlapping, somewhat longer than broad, venation subobsolete, the humeral trunk and veins at caudal margin only appreciable unless the tegmina are held up to the light, anal sulcus distinct only at sutural margin, to which margin it is perpendicular; costal margin rounding broadly to sutural margin, so that the median segment only is completely covered. Wings vestigial, represented by lateral pads. Abdominal tergites with caudal margins transverse, fourth tergite with latero-caudal angles weakly acute-angulate produced, fifth and sixth with these angles increasingly produced,

[19] From τετρα-στικτή=four-spotted.

[20] After careful consideration of the description of *Nyctibora (Heminyctibora) truncata*, we feel that Kirby is unwarranted in elevating *Heminyctibora* to generic rank and that the name should be placed in synonymy under *Nyctibora*. The character of reduced organs of flight, alone given as a basis for that name, is insufficient.

dentate. Supra-anal plate roundly produced between cercal bases, showing a weakly triangular tendency, length three-quarters width between cerci. Cerci more compact than in flying species, with dorsal surface weakly convex. Subgenital plate and styles of the general type characteristic of the genus; sinistral style situated proximad, five times as long as greatest proximal width, curving along margin of plate, weakly tapering and flattening at apex; dextral style situated distad, heavier and shorter than sinistral style, similar but enlarging in proximal fifth, less than four times as long as greatest width. Ventro-cephalic margin of cephalic femora armed with (nine to thirteen) small but stout spines, terminating in three spines, elongate in increasing ratio distad; other ventral femoral margins well supplied with heavy spines, those of the caudal margins much more elongate than those of the cephalic margins. Metatarsus unarmed ventrad, four proximal tarsal joints supplied with very large pulvilli. Large arolia present between the stout, asymmetrical tarsal claws.

*Allotype.*—♀; same data as type, but taken June 28, 1918. [Hebard Collection.]

Agrees closely with male, but differing in the following respects. Interocular space narrower, hardly one-fifth as wide as that between antennal sockets. Pronotum broader, with caudal margin even more decidedly transverse, Tegmina nearly as long as broad, sharply truncate distad, leaving the median segment exposed. Supra-anal plate larger, minutely rectangulate emarginate at apex. Subgenital plate large, short, unspecialized.

General coloration shining black, tegmina showing a faint tinge of liver brown. Male with fifth and sixth abdominal tergites showing a large submarginal spot proximad on each side of vinaceous-rufous or ferruginous. Eyes chestnut brown. Antennae black proximad, russet in distal portions. Limbs showing a liver brown tinge distad, pulvilli and ventral surface of arolia buffy. In the female and immature stages the dorsal surface of the abdomen is unicolorous, black. In immatures the head and cerci are deep bay.

In one adult, killed before having become thoroughly hardened, the pronotum is liver brown darkened caudad and latero-cephalad, the tegmina transparent hays russet.

*Measurements (in millimeters)*

| | Length of body | Length of pronotum | Width of pronotum | Exposed length of tegmen | Width of tegmen | Length of caudal femur |
|---|---|---|---|---|---|---|
| ♂ | | | | | | |
| *Type* | 25 | 6.9 | 9.8 | 7.4 | 7.1 | 7.3 |
| *Paratypes*, (5) | 24.5–26 | 6.6–7.2[21] | 9.6–10.1[21] | 7.4–7.8 | 7–7.2 | 7–7.2 |
| ♀ | | | | | | |
| *Allotype* | 24.5 | 7.2 | 10.8 | 7 | 7.6 | 7.2 |

[21] These measurements are for the specimen noted above, which had recently emerged when killed. It is possible that considerable pronotal shrinkage might still have occurred, the pronotum being noticeably larger than in any other male and more of the general form of the female and juveniles.

*Specimens Examined:* 17; 6 males, 1 female, 10 immature individuals.

Rosario, Sinaloa, 3 juv. ♂, 4 juv. ♀.

Venvidio, Sinaloa, VI, 28 to VII, 22, 1918, (J. A. Kusche), 6 ♂, 1 ♀, *type*, *allotype* and *paratypes*, 1 large juv. ♂, 2 large juv. ♀.

BLATTINAE

**Neostylopyga rhombifolia** (Stoll)

1813. [*Blatta*] *rhombifolia* Stoll, Natuur. Afbeeld. Beschr. Spooken etc., Kakkerlakken, p. 5, register p. 11, pl. IIId, fig. 13. [Apparently an immature female, no locality given.]

Rosario, 1 juv. ♂. Mazatlan, XII, 16 to 31, 1916, 2 juv. ♂, 4 juv. ♀. Los Mochis, II, 2, 1918, 1 juv. ♀.

We have previously recorded this species from Escuinapa, Sinaloa.

**Periplaneta americana** (Linnaeus)

1758. [*Blatta*] *americana* Linnaeus, Syst. Nat., Ed. X, p. 424. [America.]

Rosario, 1 ♀. Mazatlan, XII, 16 to 31, 1916, 14 ♂, 4 ♀, 1 juv. ♀. Los Mochis, I, 1 to 2, 1918, 1 ♂, 1 very small juv.

**Periplaneta australasiae** (Fabricius)

1775. [*Blatta*] *australasiae* Fabricius, Syst. Ent., p. 271. ["In nave e mare Pacifico et regionibus incognitis revertente."]

Mazatlan, XII, 16 to 31, 1916, 6 ♂, 1 ♀, 1 juv. ♂.

PANCHLORINAE

**Pycnoscelus surinamensis** (Linnaeus)

1767. [*Blatta*] *surinamensis* Linnaeus, Syst. Nat., Ed. XII, p. 687. [Surinam.]

Rosario, 1 ♀. Mazatlan, II, 21, 1918, 1 ♀; XII, 16 to 31, 1916, 81 ♀, 7 juv. ♀. Venvidio, VI, 30 to VIII, 1918, 11 ♀, 1 juv. ♀. Los Mochis, II, 2, 1918, 2 ♀.

In over a thousand American specimens we have examined, no males have been found. Mr. Wm. T. Davis, however, has secured a single male from the colony at the New York Zoological Park.

It would appear certain that the species is, in America, almost always parthenogenetic.

**Panchlora cubensis** (Saussure)

1862. *P*[*anchlora*] *cubensis* Saussure, Rev. et Mag. de Zool., (2), XIV, p. 230. [♀, Cuba.]

Venvidio, VI, 31 to VIII, 10, 1918, 8 ♂, 1 ♀.

**Panchlora cahita** new species (Plate VII, figure 1.)

This handsome insect belongs to the green species of the genus, with antennae showing a single dark annulus, but pronotum without narrow dark lateral lines.

The tegmina, lacking dots and lines, and heavier limb armament, distinguish it from *P. fraterna* Saussure and Zehntner, *hyalina* Saussure and *festae* Giglio-Tos. In this it agrees only with *P. acolhua* Saussure and Zehntner, now known from the States of Guerrero and Chiapas, from females only. The present insect is separable from that species by its narrower form and much narrower tegminal marginal field. Males of *acolhua* will probably show additional features of difference.

A single female is in the Academy Collection from Guadalajara, Jalisco, taken by D. L. Crawford, which we refer to the present species with some uncertainty. It is readily distinguished from the female of *acolhua* recorded recently by us,[22] by the characters mentioned above and the more strongly bilobate supra-anal plate.[23]

*Type.*—♂; Venvidio, Sinaloa, Mexico. August 18, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 761.]

Size medium, form broad for the genus. Head with eyes rather narrow in front, considerably narrower than in *P. cubensis* Saussure; separated by a moderately broad space, slightly over half the occipital ocular depth.[24] Pronotum broad for the genus, the lateral portions not clear, transparent but tinged with greenish, the marginal field filled with a network of coarse, opaque greenish veinlets.[25] Supra-anal plate strongly bilobate. Cerci small, extending very slightly beyond the apex of the produced supra-anal plate, tapering distad, the last joint flattened, elongate-triangular, with apex sharply rounded. Subgenital plate transverse, asymmetrical, the sinistral portion

[22] Trans. Amer. Ent. Soc., XLVII, p. 213, (1921).

[23] In this specimen the interocular space is hazel, the face mesad and dorsal margins of the femora suffused with chestnut brown, while the antennal annulus occupies sixteen joints. The measurements are, for this female: length of body, 23; width of interocular space, 1; length of pronotum, 6.2; width of pronotum, 8.7; length of tegmen, 21.8; width of tegmen, 8; width of tegminal marginal field, 1.7 mm. Additional material is needed to determine whether these features indicate specific differentiation or are due only to individual variation.

[24] Varying in the series from slightly less to decidedly greater than half that dimension.

[25] Varying in intensity in the series and in rare examples absent from the larger portion of this field.

roundly produced but showing a slight truncation, so that its free margin in large part coincides with that of the sinistral lobe of the supra-anal plate, this production with surface broadly concave and hairy, the free margin thence transverse to the dextral style, situated at the dextral base of the plate. Styles simple, elongate, cylindrical and similar, situated on the free margin of the subgenital plate at the inner margin of the cerci and equal to half the length of the exposed portion of the cercus (or slightly more elongate). Cephalic femora with a fringe of hairs on ventro-cephalic margin, other ventral femoral margins with a single heavy and moderately elongate distal spine, except caudal margin of caudal femora which bears no distal spine. Large pulvilli present on four proximal tarsal joints. Moderately large arolia present between the symmetrical tarsal claws, which have no internal flange, but have the internal margin microscopically serrulate.

Dorsal surface rich tiber green,[27] fading toward hyaline laterad on pronotum, in tegminal marginal field and between veins distad on tegmina, area between mediastine and humeral veins often very slightly yellowish. Head ocher red, frequently paling to buffy on face. Eyes blackish brown. Antennae light ochraceous-tawny, with a blackish brown annulus in distal portion including five (normal in series, varying to nine) joints. Limbs and abdomen probably green-yellow in life, the former buffy except distad in dried material.

The measurements of the type are given first, followed by the extremes in the paratypic males. Length of body, 14.5, 13.2 to 15.9; length of pronotum, 4.9, 4.8 to 5.2; width of pronotum, 6.3, 6.2 to 6.7; length of tegmen, 17, 15.6 to 17.3; width of tegmen, 5.9, 5.7 to 6; width of tegminal marginal field, 1.1, 1 to 1.1 mm.

In addition to the type, a series of forty-seven paratypic males are before us, bearing the same data, except that they were taken from July 28 to September 2, 1918.

**Panchlora montezuma** Saussure and Zehntner

1893. *Panchlora montezuma* Saussure and Zehntner, Biol. Cent.-Amer., Orth., 1, p. 98. [♂, ♀; Presidio of Mazatlan, [Sinaloa,] Mexico.]

Villa Union, IX, 27, 1918, 7 ♂, 2 ♀. Venvidio, VI, 16 to VIII, 12, 1918, 51 ♂, 14 ♀.

The original description is apparently carelessly drawn in some respects. The interocular space in males before us is narrow, varying from less than one-sixth to one-fifth the occipital ocular depth. The antennae are blackish brown, becoming pale, ochraceous-tawny, mesad and at the tips, rarely the median portion is also dark, while occasionally the proximal portion is

[26] In the series very rarely showing a very minute, stout spine mesad on this margin.

[27] A deeper green than in *cubensis* and its allies.

scarcely darker than the median pale portion. The pronotum is immaculate in all but a few females, where a pair of median flecks of brown appear, varying from subobsolete to distinctly indicated. The males average paler with pronotum and tegmina warm buff, the former often showing a faint greenish tinge. The darker females have the pronotum largely ochraceous-buff tinged with tawny, the mesonotum and metanotum with extensive suffusions and all but narrow periphery of abdomen solidly chestnut brown, this showing through, particularly caudad of the pronotal disk and mesad in anal fields of tegmina when they are at rest. Two flecks of dark brown are found distad on each tegmen, these are very greatly reduced but persist even in the males of maximum recessive coloration.

**Nauphoeta cinerea** (Olivier)

1789. *Blatta cinerea* Olivier, Encycl. Method., Ins., IV, p. 314. [Adults and juv.; "L'Ile de France" (= Mauritius).]

Rosario, 2 small juv.

CORYDIINAE

**Holocompsa scotaea** new species (Plate VII, figures 2 to 5.)

Closely related to *H. nitidula* (Fabricius), the present species differs in the slightly more metallic blue-black general coloration, solidly darkened transparent portions of the tegmina and decidedly less contrast in coloration between the sexes. In *scotaea* the male has the pronotum dark, with small areas of tawny latero-cephalad, the female has the pronotum dark, with lateral portions ochraceous-tawny. Recession in coloration apparently results in the pronotum of females being sometimes ochraceous-tawny laterad and cephalad, the dark portion reduced to a roughly triangular area meso-caudad, occupying only a third of the pronotal surface.

*Type.*—♂; Venvidio, Sinaloa, Mexico. June 24, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 763.]

Size very small, slightly larger than *nitidula;* form elliptical, tegmina and wings projecting slightly beyond apex of abdomen. Head fully as broad as long, eyes very widely separated, above not extending inward beyond antennal bases; ocelli minute, oval, with surfaces convex; occiput supplied with minute hairs, these fewer on face, which shows a weak vertical linear sulcus mesad. Pronotum as in *nitidula;* thickly supplied with minute procumbent hairs and

laterad with longer erect hairs. Tegmina proximad opaque and thickly supplied with similar hairs, bounded by a nearly straight, oblique line from apex of anal field to distal portion of costal margin; remaining portion delicate, suffused hyaline. Wings delicate, hyaline, with two elongate, adjacent, translucent stigmata at costal margin. Cerci with (seven) strongly defined rounded joints, none much longer than broad, tapering to acute apex. Supra-anal plate delicate, sub-bilobate in caudal outline. Subgenital plate somewhat asymmetrical, bilobate, with two very small, simple, straight, elongate, cylindrical styles. Limb armament, pulvilli and arolia as characteristic of the genus.

*Allotype.*—♀; same data as type. [Hebard Collection.]

Agrees with male except as follows. Size larger, form broader, with tegmina and wings extending to apex of abdomen. Ocelli elliptical. Supra-anal plate more chitinous, half as long as width between cercal bases, produced between these and broadly rounding to the broadly transverse distal portion. Subgenital plate valvular, as characteristic of the genus.

The coloration of this species, as in other forms of the genus, affords the specific diagnostic characters of greatest importance. Male. Head blackish brown, mouthparts paler. Antennae blackish brown, with a buffy annulus distad, which occupies three to four joints. Underparts and limbs blackish brown, the latter with trochanters and joints paler, spines ochraceous-tawny. Pronotum black with a weak metallic bluish sheen, proximo-lateral portions narrowly ochraceous-tawny (in a male paratype this extends to the latero-caudal angles). Tegmina in proximal portions black with a metallic bluish sheen (but when held to light translucent prout's brown); in distal portions transparent, evenly suffused with prout's brown. Wings with stigmata translucent prout's brown, remaining portions hyaline, very faintly washed with prout's brown, except distal portion of anterior field and peripheral margin of radiate field where they are suffused with this color. Dorsal surface of abdomen and cerci shining blackish brown.

Female. Differing from the male in color only as follows. Antennae with a buffy annulus occupying six or seven joints. Ochraceous-tawny lateral portions of pronotum extending to near the latero-caudal angles, in one recessive specimen more orange in shade, including these angles and leaving only the meso-caudal third of the pronotum black. Tegmina with metallic bluish sheen of proximal portions more pronounced.

*Measurements (in millimeters)*

| ♂ | Length of body | Length of pronotum | Width of pronotum | Length of tegmen | Width of tegmen |
|---|---|---|---|---|---|
| *Type* | 5.8 | 1.8 | 2.2 | 4.9 | 2 |
| *Paratype* | 6 | 1.8 | 2.1 | 4.9 | 2 |
| ♀ | | | | | |
| *Allotype* | 7.2 | 2.2 | 2.8 | 5.8 | 2.7 |
| *Paratypes* (3) | 6–6.4 | 1.9–2 | 2.2–2.9 | 5.3–5.8 | 2.2–2.7 |

In addition to the described pair, we have before us one male and three female paratypes, bearing the same data.

**Compsodes schwarzi** (Caudell)

1913. *Latindia schwarzi* Caudell, Proc. Ent. Soc. Washington, v, p. 165. [♂; Madero Canyon, Santa Rita Mountains, Arizona.]

Venvidio, VI, 24 to VIII, 10, 1918, 10 ♂.

These specimens are all decidedly darker than any others we have seen, being bister to very dark bister in general coloration. This intensification of coloration may be ascribable to the somewhat less arid environment in which this series was probably secured.

**CALOBLATTA** Saussure

1893. *Caloblatta* Saussure, Societas Entomol., p. 57.

1893. *Caloblatta* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 33.

We are convinced that Saussure, misled by a certain amount of superficial resemblance to *Thyrsocera*, incorrectly referred this genus to the Pseudomopinae.

Through differing to an extreme degree in wing venation, as well as in pronotal contour and in other less important features, nearest relationship is apparently with that section of the Corydiinae which includes *Hypnorna* and its allies.

The material now before us, when compared with the second, more detailed, description of *Caloblatta*, differs in having the caudal margin of the pronotum very broadly convex, showing scarcely a trace of any "very weak median production"; the veins of the discoidal field of the tegmina are not all longitudinal, as these discoidal sectors become weakly oblique toward the sutural margin, while weak spines are present on all the ventral femoral margins.

We here select the Costa Rican *C. bicolor* Saussure as genotype of *Caloblatta*. Examination of the type or additional material, we believe, will show the species described below to be congeneric, in spite of the apparently important differences noted above.

**Caloblatta lampra** new species (Plate VII, figures 6 and 7.)

The antennae without annuli and rich ferruginous pronotum of this insect, with area between the latero-caudal sulci of the disk suffused with carob brown, readily distinguish it from its nearest relative, *C. bicolor* Saussure, described from Costa Rica.

*Type.*—♂; Venvidio, Sinaloa, Mexico. July 6 to 12, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 764.]

Size large for this group of small insects, form slender. Head with width between antennal sockets equal to three-quarters of the interocular width; interocular-ocellar area flattened, shagreenous and with irregular shallow impressions, this area forming a sharp rectangle with the dorsal margins of the ocelli; ocelli large, with flat surfaces vertical. Maxillary palpi rather short, enlarged fifth joint nearly as long as combined length of second and third joints, fourth joint two-thirds as long as third. Antennae setaceous, the setae slightly longer and heavier in the proximal, moderately incrassate half. Pronotum symmetrically trapezoidal, weakly transverse, latero-caudal angles broadly rounded, latero-cephalic angles still more broadly rounded, cephalic and caudal margins transverse, very broadly convex; latero-caudal sulci of disk pronounced, giving the intervening area a greater convexity. Tegmina and wings fully developed, extending slightly beyond cercal apices. Tegmina elongate, subparallel to the broadly rounded apex; discoidal sectors weakly radiating, so that those toward the discoidal vein are parallel to it, those toward the sutural margin weakly oblique to that margin. Wings elongate and rather narrow, radiate field folding fan-wise; numerous (fourteen) costal veins thickened to near bases, unbranched median vein connected with discoidal vein by a number of transverse veinlets, ulnar vein with (two) complete distal and several irregular incomplete proximal branches, intercalated triangle obsolete. Dorsal surface of abdomen[28] with eighth tergite narrowly visible except laterad, where it is symmetrically and triangularly produced and folded about the lateral portions of the base of the subgenital plate, dorso-mesad with a low triangular conical projection, the preceding (seventh) tergite narrowly visible laterad and emarginate to the caudal margin of the sixth tergite mesad, which margin, in consequence, is adjacent to the conical projection of the eighth tergite. Supra-anal plate transverse, broadly and roundly triangularly produced between cercal bases with distal portion decurved. Subgenital plate with sinistral margin briefly oblique below sinistral cercus, then briefly transverse where mesad is situated the sinistral style, beyond in remaining two-thirds broadly and slightly irregularly angulato-convex, with dextral style situated at apex. Styles small, simple, cylindrical, unarmed; the sinistral slightly tapering and very weakly decurved, slightly over twice as long as its proximal width; the dextral scarcely tapering, slightly heavier and shorter, but otherwise similar. Limbs slender. Ventro-cephalic margin of cephalic femora armed with large but delicate spines proximad, succeeded by a row of minute, piliform spines, terminating distad in two large but delicate spines, the more distal of which is the longer by a third; ventro-caudal margin unarmed except for a single delicate distal spine. Other femora with a delicate genicular spine and ventral margins armed with a similar distal and one to three other smaller, delicate spines, these short on

[28] As has been our custom, we count the ten dorsal abdominal segments as follows; median segment, first to eighth tergites, supra-anal plates.

cephalic margins, longer on caudal margins. Small distal pulvilli present on the four proximal tarsal joints. Small arolia present between the bases of the delicate, simple, symmetrical tarsal claws.

Head and palpi blackish brown, ocelli buffy. Antennae blackish brown, shading to hazel in distal fourth. Pronotum ferruginous, suffused with carob brown between the latero-caudal sulci of the disk, this forming a poorly defined, short, broad, V-shaped marking. Tegmina very weakly translucent, dull carob brown, very narrow marginal field light ochraceous-buff, this continued along costal margin but narrowing and disappearing toward apex, sutural margin of sinistral tegmen more broadly margined with ochraceous-buff for an equal distance. In some specimens these marginal areas are weakly suffused with tawny and are about equal in width. Abdomen and cerci blackish brown. Limbs part pale and part dark, ochraceous-buff, often tinged with tawny or blackish brown; cephalic coxae light with a proximal dark fleck, median and caudal coxae dark in nearly all of proximal half. Trochanters and over proximal half of cephalic femora pale, remaining portions dark; median and caudal femora similar but with less than proximal half pale. Tibiae and tarsi dark, spines ochraceous-buff tinged with tawny.

The measurements of the type are given first. Length of body, 10.5, 9.2 to 10.9; length of pronotum, 2.9, 2.7 to 2.9; width of pronotum, 3.3, 3 to 3.3; length of tegmen, 10. 9 to 10.3; width of tegmen, 3, 2.8 to 3.1 mm.

In addition to the type, a series of five male paratypes, bearing the same data but taken June 24 to July, 12, 1918, are before us.

### OXYHALOINAE

**Chorisoneura anisoura**[29] new species (Plate VII, figure 8.)

Belonging to the Pellucida Group,[30] the present species is smaller, with tegmina less elongate than the previously known forms. In addition, the asymmetrical specialization of the male styles is of a type hitherto unknown.

*Type.*—♂; Venvidio, Sinaloa, Mexico. July 28 to August 1, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 765.]

Size medium large for the genus, decidedly smaller than in *C. pellucida* Saussure; form depressed, in outline elliptico-ovoid. Head broad, decidedly depressed; from the dorsum the occiput and cephalic half of the eyes are seen to be exposed, occipital outline truncate, the eyes not projecting beyond the interocular area; interocular space broad, one and one-third times occipital ocular depth, nearly four-fifths as wide as width between antennal sockets. Maxillary palpi with fourth joint three-quarters as long as the elongate third joint, fifth joint slightly shorter than fourth. Pronotum transverse elliptical,

[29] From ἄνισῃ + οὐρὰ, in allusion to the remarkably unequal styles of the male subgenital plate.

[30] Erected and discussed, Mem. Amer. Ent. Soc., no. 4, p. 128, (1920).

with lateral portions broad, as is characteristic of this group of *Chorisoneura*. Tegmina elongate, though not as elongate or as acute at apex as in *pellucida*, extending to apices of cerci; marginal field very broad, apex sharply rounded, moderately acute; discoidal vein with numerous branches and false nervures toward costal margin, discoidal sectors (fourteen, counting the numerous supplementary branches) oblique. Wings with intercalated triangle acute-angulate proximad, numerous costal veins heavily and briefly clubbed distad; discoidal and median veins connected by transverse veinlets; ulnar vein branching distad. Sixth dorsal abdominal segment with a very large, round, slightly impressed area mesad, its surface well supplied with minute, microscopic, procumbent hairs. Supra-anal plate nearly one-third as long as basal width, triangularly produced between cerci with apex truncate, subbilobate. Subgenital plate asymmetrical (see plate VII, figure 8); sinistral style situated slightly sinistrad of median point, a deeply inset broad lobe with apex rounded,[31] upon dissection its internal surface is seen to be concave, its margins free except sinistrad, these margins proximad and dextrad fringed with very minute, nearly procumbent, chaetiform spines; dextral style dextrad of and touching the dextral margin of the sinistral style, considerably more produced caudad, a finger-like process, bent mesad with distal half directed caudad, the apex slightly thickened with margin rounded, upon dissection its internal surface is seen to be concave;[32] the internal surface of the plate is also deeply concave toward the sinistral and dextral margins, these marginal portions separated from the remaining broadly concave surface by decided, lamellate, somewhat irregular ridges. Limb armament, pulvilli, tarsal claws and arolia as characteristic of the genus.

Head with vertex ochraceous-buff, shading to ochraceous-tawny, this extending to just before narrowest point between eyes, where it is in abrupt contrast with the light buff inter-ocular-ocellar area. In this intersection are two (often obscured) dots of prout's brown.[33] Antennae, remaining portions of face and palpi warm buff. Pronotum with hexagonal disk ochraceous-buff very faintly tinged with tawny, lateral portions transparent showing a very faint brownish buffy tint. Scutellum with a moderately large median dot of light buff. Tegmina with marginal and external two-thirds of scapular fields as lateral portions of pronotum, remaining portions with veins and veinlets buffy, the remaining portions transparent tinged with ochraceous-tawny. Wings transparent washed weakly with ochraceous-tawny, this

[31] Giving the appearance of the apical portion of the plate, separated from the other portions by a suture.

[32] In the series slight irregularities in the contour of the lobiform sinistral and finger-like dextral style is shown, their general type remaining, however, the same.

[33] The whitish area is immaculate in the type, but in the majority of the series two similar, but much more widely separated, dots of prout's brown are found just below, and in some individuals two more similar dots occur just below these, still more widely separated and touching the margins of the eyes.

more decided in area of costal veins and distad in anterior radiate fields. Ventral surface and limbs translucent ochraceous-buff, the sternites heavily suffused with opaque light buff.

In coloration this species apparently closely resembles *pellucida*. It is the same generally as in *C. panamae* Hebard, which species is, however, more richly colored with pronotal disk not unicolorous and showing other minor differences.

The measurements of the type are given first. Length of body, 9.4, 9 to 9.7; length of pronotum, 2.2, 2 to 2.2; width of pronotum, 3.4, 3.2 to 3.4; length of tegmen, 9, 8.7 to 9.5; width of tegmen, 3, 2.9 to 3.1 mm.

In addition to the type, a series of six male paratypes, bearing the same data but taken from June 30 to August 6, 1918, has been examined.

**Chorisoneura flavipennis** Saussure and Zehntner

1893. *Chorisoneura flavipennis* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 81, pl. II, fig. 21. [♂; Atoyac, Vera Cruz, Mexico.]

Venvidio, VI, 30 to IX, 2, 1918, 17 ♂, 2 ♀.

These specimens appear to agree in all important respects with material recorded from Guatemala and Costa Rica,[34] at which time the Flavipennis Group was proposed and *C. fuscipennis* Hebard compared with the present species. Both these species have the median portion of the plate between the bases of the styles produced dextrad in a small, stout spine, which curves caudad. The styles in *flavipennis* are broader and more lamellate.

The species is very plainly colored, the head immaculate[35] and the general tone of coloration more reddish than in *C. translucida* Saussure and its allies.

## Mantidae

### EREMIAPHILINAE

**Mantoida maya** Saussure and Zehntner

1894. *Mantoida maya* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 125, pl. II, figs. 26 and 27. [♀; Temax, Yucatan, [Mexico].]

Venvidio, VII, 6 to IX, 2, 1918, 12 ♂.

This series averages larger than the only other males we have seen, one from Panama, the other from Colombia. Careful

[34] Mem. Amer. Ent. Soc., no. 4, p. 131, (1920).

[35] In the majority of the series the interocular area is unicolorous. In a few specimens, however, there is a very weak indication of a broad, very slightly darker, band.

examination fails to reveal other features of diagnostic value, however, and we believe that these all represent the same species.

In the material here recorded the pair of heavy dark bands on the occiput vary in intensity. In some these bands are obsolete on the pronotum, but in the majority of specimens they heavily suffuse all of the lateral portions of the pronotum on each side. In this series the cephalic coxae are buffy, the median and caudal limbs more reddish. The cephalic trochanters, proximo-internal portion of the cephalic femora and external surface of the same are conspicuously darkened to varying degrees, the external surface of the cephalic tibiae but slightly paler. The tarsi are sometimes unicolorous, sometimes darkened at the apices of the joints.

Each series, of the four from widely separated localities before us, representing *maya*, shows certain color differences and those noted here, which do not all agree with the type, undoubtedly constitute only local color adaptations of no specific or racial significance.

Length of body, 16 to 17.7; length of antenna, 24.5 to 25.7; length of pronotum, 2.3 to 2.3; width of pronotum, 2.1 to 2.2; length of tegmen, 16.2 to 16.7; length of caudal femur, 5.7 to 6.3 mm.

AMELINAE

**Yersinia mexicana** (Saussure)

1859. *A[canthops] mexicanus* Saussure, Rev. et Mag. de Zool., (2), XI, p. 60. [♂ (nec larva); [Michoacan,] Mexico.]

Venvidio, VIII, 2 to IX, 2, 1918, 12 ♂, 5 ♀. Villa Union, II, 21 and IX, 27, 1918, 1 ♂, 1 ♀.

This handsome species was subsequently fully described by Saussure.[36] The specimens before us are all brown, some pale and immaculate, others variable, darker with flecks of dark brown. The cephalic coxae are sometimes immaculate, but usually have a row of dark flecks on the dorso-internal margin and rarely a dark suffusion distad. The cephalic femora are rarely immaculate, usually having on the internal surface a large, shining, roughly square, black marking at the unguicular

[36] Mém. l'Hist. Nat. Mex., IV, Mantides, p. 99, pl. 1, figs. 14, 14a and 15, (1871).

sulcus and a smaller similar marking in the area of the femoral brush. The great variation exhibited in these features shows the folly of attempting to separate as species, individuals of the Mantidae differing only in such, or analogous, color characters.

Though previously known only from the originally described material, there are, in addition, in the author's collection a male from Aguascalientes, taken in November, 1887, by L. Bruner, and two females, one from Rio Cocula, Guerrero, the other from Tepic. This male has the eyes slightly more acute, with their dorsal margins slightly ascending, so that the head does not appear as nearly transverse dorsad as in the Sinaloa series. This we believe to be wholly attributable to individual variation, though large series may prove geographic racial differentiation.

### OLIGONICINAE

**Oligonicella mexicana** (Saussure and Zehntner)

1894. *Oligonyx mexicanus* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 172, pl. IX, figs. 13 to 15. [♂: Presidio [of Mazatlan, Sinaloa], Mexico; Cubulco, Vera Paz, Guatemala.]

1894. *Oligonyx toltecus* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I. p. 175. [♀; Chilpancingo, Guerrero, Mexico.]

At the time *toltecus* was described, the authors noted the possibility of its representing the opposite sex of *mexicanus*.[37]

Venvidio, VI, 16 to IX, 2, 1918, 14 ♂, 1 ♀. Los Mochis, XII, 1917 and I, 1 to 2, 1918, 3 ♂.

A pair of this species from Tepic is also in the collection of the author.

The measurements of the extremes in the present series are: length of body, ♂ 37 to 42.7, ♀[38] 37.2 to 44.8; length of pronotum, ♂ 9 to 10.7, ♀ 11.3 to 14; greatest width of pronotum, ♂ 1.9 to 2, ♀ 2.2 to 2.4; length of tegmen, ♂ 20 to 22; length of supra-anal plate, ♂ 1.7 to 1.7, ♀ 2.1 to 2.2; length of cephalic femur, ♂ 6.4 to 7.8, ♀ 8.1 to 9.3 mm.

[37] Saussure and Zehntner give 3.2 mm. as the length of the supra-anal plate for *toltecus*. This is either in error or very decided individual variation occurs, as we have found to be true of females of certain other species of this group.

[38] The larger female is from Venvidio.

**Oligonicella tessellata** (Saussure and Zehntner)

1894. *Oligonyx tessellatus* Saussure and Zehntner, Biol. Cent.-Amer., Orth., I, p. 174, pl. IX, figs. 26 to 31. [♂; Omilteme, Guerrero, Mexico.]

Venvidio, VI, 16 to VII, 22, 1918, 4 ♂.

The variation shown by the present series might indicate the synonymy of this name under *O. punctulatus* (Saussure and Zehntner), described from Dos Arroyos, Guerrero, Mexico. If the figures are correct, however, *punctulata* is a decidedly more slender insect.

Measurements of males: length of body, 26 to 28.9; length of pronotum, 5.2 to 6; greatest pronotal width, 2.2 to 2.6; length of tegmen, 18 to 19.6; greatest width of tegmen, 5.2 to 5.8; length of cephalic femur, 5.3 to 6 mm.

An immature female from Sierra Laguna, Baja California, is also in the author's collection.

MELLIERINAE

**Melliera atopogamia** Saussure

1892. *Melliera atopogamia* Saussure, Societas Entomol., VII, p. 123. [♂, ♀; Sinaloa, Mexico.]

Venvidio, VII, 6 to VIII, 1, 1918, 3 ♂. Los Mochis, XII, 29, 1917, 2 ♂.

This remarkable species has subsequently been fully described and both sexes figured by Saussure and Zehntner,[39] who recorded additional material from San Isidro, Guatemala and Chontales, Nicaragua.

MANTINAE

**Stagmomantis tolteca** (Saussure)

1861. *Mantis* (*Stagmatoptera*) *tolteca* Saussure, Rev. et Mag. de Zool., (2), XIII, p. 127. [[♀], "Mexico calida."]

Venvido, VII, 28 to VIII, 10, 1918, 5 ♂. Los Mochis, XII, 28, 1917, 1 large juv. ♂.

The proportionately more slender pronotal shaft is the most conspicuous feature to separate males of the present series from males of the very closely related *S. carolina* (Johannson), from the eastern United States.

[39] Biol. Cent.-Amer., Orth., I, p. 149, pl. VII, figures 7 and 8, (1894).

Careful comparison of large series of these species will have to be made before the best diagnostic characters can be tabulated. We are satisfied that distinct species are represented, but so close are they that apparent features of difference between individual series may not be as useful as they seem, when comparison is made with still other series.

**Stagmomantis limbata** (Hahn)

"1836. *Mantis limbata* Hahn," Icones Orth. 1, pl. A, gen. *Mantis*, fig. 2." [Mexico.]

Venvidio, VI, 24, to IX, 2, 1918, 30 ♂. Mazatlan, XII, 28, 1916, 1 ♀. Los Mochis, XII, 2 to 29, 1917, 3 ♂, 1 ♀. Villa Union, IX, 27, 1918, 1 ♀.

This series shows considerable size and color variation. The majority of the males and all of the females have the cephalic femora immaculate. In the other males these members have three broad, transverse bands of darker shade, which are very decided in the individuals which have head, pronotum and limbs brown instead of green. The males have the tegminal marginal field opaque, usually solid green, sometimes this is narrowly bordered proximad at the mediastine vein with white, while in one brown male the entire field is white tinged with yellowish green, in another brown male it is entirely white. In all the abdomen is immaculate dorsad. The males have, at the stigma of the tegmina, a small blotch of translucent sepia, this reduced to very small size in a few specimens and obsolete in one. In this sex the transparent wings are marked with numerous paired flecks of translucent sepia in the caudal portion of the radiate field.

The extremes in size are shown by the following measurements (in millimeters).

| | Length of body | Length of pronotum | Width of pronotal supra-coxal expansion | Length of tegmen | Width of marginal field of tegmen |
|---|---|---|---|---|---|
| ♂ | | | | | |
| Venvidio (30) | 46–59.8 | 15–19.8 | 3.2–4.1 | 33.9–42.8 | 2.1–2.8 |
| Los Mochis | 46–50 | 14.7–16.4 | 3.1–3.6 | 32–36.4 | 2.1–2.3 |
| ♀ | | | | | |
| Mazatlan | 53.3 | 20 | 5.1 | 24.7 | 3.7 |
| Los Mochis | 43 | 15.9 | 4.2 | 20 | 2.2 |
| Villa Union | 53.7 | 19.9 | 5.2 | 25.9 | 3.8 |

In addition to the material from the collection under consideration, we have examined 2 ♂, 1 ♀, from San Pedro Martir, Baja California; 1 ♂, Sierra el Taste, Baja California, and 3 ♂, 11 ♀, from San José del Cabo, Baja California.

**Stagmomantis colorata** new species (Plate VII, figure 9.)

Nearest relationship is apparently with *S. californica* Rehn and Hebard,[40] agreement being found in the type of the male stigma, the banded abdomen,[41] features of the supra-anal and subgenital plates and female head and tegmina. The much larger size, opaque, unicolorous and gradually narrowing marginal field of the male tegmina and other less striking features serve to separate these species.

At first glance individuals of *colorata* somewhat resemble large individuals of *S. limbata* (Hahn). Males are quickly distinguished by their larger size, costal margin of tegmina which is proportionately narrower proximad and narrows much more gradually, proximal abdominal tergites the blackish brown caudal portions of which form broad and striking transverse bands, tegmina which lack stigmal markings and wings which are entirely suffused with dark brown except for irregular pale patches in the anterior field, particularly distad, and the colorless transverse veinlets of the radiate field.

The single female before us has the appearance of a gigantic female of *S. carolina* (Johannson), but the facial scutellum is as high as in this sex of *limbata* and the pronotal shaft is more strongly medio-longitudinally carinate. This specimen is very dark, the stigmal smooth area even darker than the other portions of the tegmina and the transverse bars on the proximal abdominal tergites very broad, but showing by no means as great color contrast as in the males.

In both sexes the spines of the cephalic coxae are pale, while the cephalic femora have a small fleck of blackish brown at the unguicular sulcus.

[40] One male from Sierra el Taste, Baja California and three males from San José del Cabo, Baja California are before us. These represent the first records of *californica* from outside the United States.

[41] In the green phase of *californica* the cephalic tarsal joints show distad on their internal surfaces only weak suffusions of brown, though in the brown phase these are as strong as in the individuals of *colorata* before us, all of the latter representing the brown phase.

*Type.*—♂; Villa Union, Sinaloa, Mexico. September 27, 1918. [Hebard Collection, Type no. 865.]

Size large, form elongate. Head as in *limbata*, except that the dorsal angle of the facial scutellum is evenly rounded, not bilobate. Pronotum with lateral margins smooth, except on collar where they are very feebly sub-denticulate; supra-coxal expansion moderate, as in *limbata;* shaft with a decided medio-longitudinal carina. Tegmina with marginal field opaque, rather narrow and narrowing very gradually and evenly from proximal point of greatest width, stigma neither defined in color nor with an adjacent suffusion. Abdomen with proximal tergites dark distad, forming broad bands. Supra-anal plate transverse, weakly chitinous toward the broadly convex free margin. Concealed genitalia apparently as in *limbata*, except that the heavy spine of the ventral lobe, similarly directed dextro-proximad, is decidedly more elongate. Subgenital plate truncate distad, with a minute median angulate emargination, so that, unlike *limbata*, each style surmounts a small rotundato-truncate lobe; these lobes are symmetrical, the dextral narrower but projecting further than the sinistral. Cephalic coxae reaching to proximal third of pronotal shaft, cephalic margin armed with (six to nine in the series) small, bluntly rounded spinulae, between which are irregularly scattered a few very minute tuberculations. Caudal metatarsus shorter than combined length of succeeding joints.

*Allotype.*—♀; Venvidio, Sinaloa, Mexico. August 28, 1918. (J. A. Kusche.) [Hebard Collection.]

Size very large, form elongate for this sex of *Stagmomantis*, though much heavier than male. Head much as in this sex of *limbata*, except that the occiput is more elevated, with vertical impressions more prominent and dorsal outline between juxta-ocular portions showing even weaker convexity, while the facial scutellum is very slightly higher.[42] Pronotum with lateral margins finely denticulate on collar, this becoming much weaker on shaft; supra-coxal expansion slightly greater than in females of *limbata* and narrowing more rapidly caudad, sulci and carina stronger than in male. Organs of flight reduced, covering slightly more than proximal half of abdomen. Tegmina opaque, stigma indicated by a smooth oval, longitudinal area, costal margin comparatively narrow and narrowing very gradually distad. Bands of proximal abdominal tergites broader, but less conspicuous, than in male. Cephalic coxae reaching to near caudal extremity of pronotal shaft, cephalic margin armed with (eight and eleven) spinulae, which are slightly heavier than in male but of the same type, between which are irregularly scattered a larger number of very small spinulae.

Coloration. Male. Head, pronotum and body light brown. Cephalic femora with a small blackish brown fleck at unguicular sulcus; external surfaces often showing three very broad transverse bands of (individually

[42] The difference in this respect is so slight that it will probably be found to have little or no diagnostic value.

varying shades of) brown. Cephalic tarsal joints each marked distad, on internal surface, with a heavy fleck of blackish brown[43]. Median and caudal limbs light green or brown. Abdomen always with proximal tergites shining and each heavily blackish brown distad, this forming very conspicuous broad, transverse bands. Tegminal marginal field opaque, light green; remaining portions transparent, colorless except for scattered flecks of brown proximad and much more numerous, fusing, similar suffusions toward the marginal field. Wings with anterior field transparent, colorless with brown flecks distad, which fuse proximad, leaving only irregular paler yellowish brown patches between; radiate field transparent, metallic purplish-black, with minute, transverse veinlets pale, and a paler pinkish area at base.

In a very recessive paratype from San José del Cabo, the tegmina show no brown suffusions, but the wings and abdomen are as strikingly colored as in the type.

Female. Brown phase. Markings of cephalic femora and tarsi as in males, abdominal bands broader but much less contrasting, bister. Tegmina opaque, bone-brown; stigma shining and still darker.

*Measurements (in millimeters)*

| | Length of body | Length of pronotum | Width of pronotal supra-coxal expansion | Length of pronotal shaft | Length of tegmen | Width of tegminal marginal field |
|---|---|---|---|---|---|---|
| ♂ | | | | | | |
| Villa Union, *type* | 69.5 | 22.7 | 4.2 | 17.4 | 44.7 | 2.2 |
| Tepic, *paratype* | 58 | 20.3 | 4.2 | 15.7 | 46 | 2.2 |
| Tepic, *paratype* | 61 | 20.2 | 4.2 | 15.4 | 44 | 2.4 |
| San José del Cabo, *paratype* | 66 | 21.7 | 4.4 | 16.8 | 50.2 | 2.4 |
| ♀ | | | | | | |
| Venvidio, *allotype* | 83.5 | 30.7 | 7.7 | 22.9 | 29 | 2.8 |

In addition to the described pair, two paratypic males from Tepic, a paratypic male from San José del Cabo, Baja California, and three large immature individuals (two males and one female) from Venvidio, Sinaloa, taken August 18 and 28, 1918, by J. A. Kusche, are in the author's collection.

EPAPHRODITINAE

**Acanthops bidens** new species (Plate VII, figures 10 and 11.)

This handsome species is readily distinguished by the dentate production of each juxta-ocular area of the occiput. It is apparently nearest the Honduran *A. godmani* Saussure and Zehntner,

[43] In species of *Stagmomantis* such marking often disappears in specimens of strong recessive coloration. This character is, therefore, of highly uncertain specific diagnostic value, and Giglio-Tos' recent use of it in that sense has probably resulted in the erection of one or more synonyms.

differing further in the proportionately shorter pronotum and tegmina which are moderately, though not greatly, produced at their apices. Like in *godmani*, the apices of the wings alone are darkened, while the lateral productions of the abdominal tergites are very similar. The female sex of these species is unknown.

*Type.*—♂; Venvidio, Sinaloa, Mexico. July 28 to August 1, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 866.]

Size medium, form normal for the genus. Head with juxta-ocular portions of occiput each produced dorsad in a small blunt tooth; ocelli large and approximate, forming a triangle slightly broader than deep, above which there is a fine but distinct carina, this carina forming an obtuse-angle dorsad; facial scutellum with depth about two-fifths its width, dorsal margin finely carinate and with a small, projecting tubercle on each side of the median ocellus. Pronotum of normal form for genus; surface with a few minute irregular, scattered tubercles, particularly cephalad, and with a pair of much larger tubercles just before caudal margin. Tegmina and wings fully developed, the former transparent in greater portion of discoidal and anal fields, elsewhere suffused; costal margin twice strongly convex, mesad strongly concave, distad weakly concave to the rounded produced apex, which portion is slightly longer than broad. Wings with distal portion heavily suffused, elsewhere transparent with obscure flecks; the apices briefly produced and rounded. Abdomen with fourth tergite produced on each side in a large, roughly quadrate, lamellate lobe, with its distal and caudal margins irregularly serrate; fifth tergite with a smaller, but similarly specialized, triangular lobe, this tergite narrowing strongly caudad; the succeeding tergites much narrower, with lateral margins terminating caudad in a minute tubercle on each side. Supra-anal plate transverse, rounded sub-bilobate. Cerci lamellato-lobate distad, as characteristic of genus. Subgenital plate with margin transverse between the small styles. Cephalic femora lamellate dorsad, with a small triangular projection at base of this margin, which is decidedly weaker than that developed in *A. falcata* Stål. Median and caudal limbs proximad covered very thickly with very fine, elongate hairs. Median tibiae strongly narrowed mesad, then gradually thickening to apex.

Coloration that of a dead leaf, individually varying from dark vandyke brown to clay color. Spot at stigma shining, always slightly darker. Pronotum with a pair of dark brown triangular markings mesad on shaft. Transparent portions of tegmina and wings paler than elsewhere, the wings, as a result, with greater portion not darkened as in *falcata*.

The measurements (in millimeters) of the type are given first, followed by the extremes in the paratypic males. Length of body, 36, 25.4 to 39.5; length of pronotum, 10.2, 9.9 to 10.4; length of tegmen, 35.1, 32 to 35.2; greatest width of tegminal marginal field, 4.3, 4 to 4 ; length of cephalic femur, 10.9 to 10.2 mm.

It is interesting to find this tropical American genus as far north as the State of Sinaloa. Previously it was not known from north of Honduras, though Saussure records the related genus, *Pseudacanthops*, from the State of Vera Cruz, Mexico.

A series of eight paratypic males have been examined, bearing the same data as the type, except that they were taken from June 16 to August 16, 1918.

VATINAE

**Phyllovates chlorophaea** (Blanchard)

1835. *Mantis chlorophaea* Blanchard, Mag. Zool., v, Ins., p. 135. [♀; Watertown, New York (in error).]

The synonymy of this species will shortly be fully discussed. Suffice it to say, at the present time, that but a single species of *Phyllovates* is known to occur in Mexico.

Venvidio, VII, 6 to VIII, 12, 1918, 9 ♂; IX, 2, 1918, 1 small juv.

Size variation in the present series is very great, the extremes measuring as follows. Length of body, 58 to 65.5; length of frontal process, 3 to 3.3; length of pronotum, 23.3 to 29.7; length of pronotal shaft, 19.5 to 25.3; length of tegmen, 36.3 to 44.8; length of cephalic coxa, 11.1 to 14 mm.

**Vates pectinata** Saussure

1871. *Vates pectinata* Saussure, Mém. l'Hist. Nat. Mex., IV, Mantides, p. 163, pl. II, fig. 24. [♂, Mexico?]

Venvidio, VII, 2 to 6, 1918, 2 ♂.

This magnificent and distinctive species has, since the original description, been definitely recorded from Atoyac, Vera Cruz, and Teapa, Tabasco, by Saussure and Zehntner in the Biologia, where they have splendidly figured both sexes.[44] A male from Cuernavaca, Morelos, taken at light by W. L. Tower on June 27, 1905, belonging to the American Museum of Natural History, is also before us.

[44] Pl. VI, figs. 4 and 5; pl. X, figs. 30, 31 and 32.

## PHASMIDAE

### HETERONEMINAE[45]

**Diapheromera erythropleura** new species (Plate VII, figures 12, 13 and 14.)

This is a very slender species, with head, however, no longer than the pronotum. In the male the pleura are bright red, the seventh tergite is half again as long as the eighth (penultimate) tergite, the cerci are unarmed proximo-internally, while the ventral margins of the median and caudal femora as well as the moderately prominent medio-longitudinal ventral carina of the latter are microscopically denticulate. In the female the color is uniform green, the seventh tergite is half again as long as the eighth, the cerci are very elongate, being almost as long as the ninth (ultimate) tergite, while the ventral margins of the median and caudal femora are not serrulate and no medio-longitudinal carina is developed ventrad.

*Type.*—♂; Venvidio, Sinaloa, Mexico. September 2, 1918. (J. A. Kusche.) [Hebard Collection, Type no. 867.]

Size medium, form very slender for the genus. Surface smooth and shining, pronotum and mesonotum with a subobsolete sulcus on each side just before the lateral margins, formed by a series of minute impressions. Seventh tergite moderately enlarged in distal two-thirds, eighth transverse, ninth (ultimate) strongly convex in dorsal portion, length subequal to width, caudal margin nearly rectangulate-emarginate with apex rounded, leaving the apex of the minute supra-anal plate exposed. Cerci unarmed, moderately elongate, curving moderately inward, with internal surface flattened and apex rounded. Subgenital opercle small, formed by eighth sternite, which is minute, weakly bilobate distad, and ninth sternite which is small, cucullate, tapering distad to the nearly acute apex, its length equal to that of the ultimate tergite. Cephalic femora slightly longer than combined length of pronotum and mesonotum. Median femora much heavier but not to the degree usual in males of the genus. Median and caudal femora with distal spine of ventro-internal margin heavy and showing a weak sigmoid tendency. Median and caudal tibiae with medio-longitudinal carina of ventral surface denticulate, this and the lateral carinae each terminating distad in a tuft of spiniform hairs.

*Allotype.*—♀; same data as type. [Hebard Collection.]

Agrees with male except as follows and as noted above. Size larger, form decidedly heavier, though much more slender than is usual in females of *Diapheromera*. Distal tergites not thickened, seventh slightly longer than

[45] This is the correct name for the subfamily termed the tribe Bacunculini by Brunner.

ninth. Cerci straight and slender. Operculum with lateral margins weakly convex-convergent distad to the acute apex, which fails to reach the median portion of the ultimate tergite, leaving the distal portion of the ovipositor valves exposed. Median femora no heavier than cephalic, median and caudal femora with distal spine of ventro-internal margin simple, straight, smaller than in male. Median and caudal tibiae with medio-longitudinal and lateral carinae of ventral surface smooth, hairy and terminated distad each in a tuft of spiniform hairs.

Coloration of male. General color prout's brown, becoming sepia on pronotum and mesonotum. Ventro-lateral portions of head, lateral portions of pronotum and of thorax only above insertion of limbs, pinkish buff. Pleura nopal red, this faintly tinging the mesonotum latero-cephalad. Caudal femora ochraceous-buff, median and caudal tibiae antimony yellow, all suffused with brown distad. Female uniform and immaculate light green.

Length of body, ♂ 78.7, ♀ 93.4; length of mesonotum, ♂ 19.2, ♀ 20.3; median width of mesonotum, ♂ 1.2, ♀ 2.8; length of metanotum (including median segment), ♂ 16, ♀ 17.2; length of median segment, ♂ 1.9, ♀ 2.1; length of first tergite, ♂ 6.5, ♀ 6.8; length of seventh tergite, ♂ 2.2, ♀ 3.2; length of eighth tergite, ♂ 1.3, ♀ 2.3; length of ninth tergite, ♂ 1.8, ♀ 2.8; length of cercus, ♂ 3.3, ♀ 2.8; length of operculum, 6.7; length of cephalic femur, ♂ 23, ♀ 24.2; length of median femur, ♂ 16.8, ♀ 17.7; length of caudal femur, ♂ 22.4, ♀ 22.8 mm.

This species is known to us only from the described pair.

PHIBALOSOMINAE

**Bostra aetolus** (Westwood)

1859. *Bacteria aetolus* Westwood, Cat. Orth. Ins. Br. Mus., I, Phasmidae, p. 27, pl. XXII, fig. 3. [♀, Mexico.]

Venvidio, VI, 16, 1918, 2 juv. ♀; VII, 6 to IX, 2, 1918, 7 ♂, 14 ♀, 1 large juv. ♂.

The present series is of great interest in that it shows the position of *aetolus* to be in *Bostra* as at present understood, the close affinity of the species to *B. jaliscensis* Rehn,[46] and demonstrates thoroughly the fact that the auricular processes of the head, lobes of the abdomen and limbs and cristation of the metatarsus, developed in the female sex, are all features subject to enormous individual variation in this and probably many other species of the group.

The following variation is noted in females of the present series. Head merely tuberculate; or with a transverse ridge of heavier tubercles on cephalic portion of occiput; or armed there

[46] It appears more than probable that the female described as *Bostra similis* by Redtenbacher, from Mexico, represents that sex of *jaliscensis*. Insektenfamilie der Phasmiden, p. 412, (1908).

with two pairs of spines, of which the outer are the longer; or with outer pair developed into roughly rounded lobes; or with these outer lobes connected with the inner spines by a jagged ridge. Abdominal tergites unspecialized; or with first and fourth with a small, flattened lamellate projection meso-caudad; or with median segment and second and third tergites with such a projection, those of the first and fourth being much larger; or with sixth tergite with latero-caudal portion lamellate and produced in narrow, horizontal lobes, rounded distad. Median femora simple; or with ventro-internal margin bearing a minute lobe or a low flange proximad and with dorso-internal margin bearing one or two very minute lobes which are usually triangular; or with ventro-internal margin bearing a rather large, foliaceous lobe which is suddenly deeply emarginate toward its caudal portion. Caudal femora usually simple, in a few specimens showing to different degrees a weak, rounded flange proximad on each ventral margin, of which that of the caudal margin is the stronger. Median and caudal tibiae simple; or bearing a small, rounded lobe on the dorso-external margin proximad. Genicular areas of median and caudal femora simple or lamellato-bilobate produced, due to a lamellation of the genicular angle and the femoral margin below. Metatarsi simple, or with those of the cephalic limbs with dorsal margin sub-lamellate, forming an obtuse-angulate outline; or with all of that type.

In all of the females the dorsal surface, except that of the abdomen, is heavily tuberculate, the mesonotum and metanotum are longitudinally tricarinate. These features, the genitalia, proportions and, to a less degree, the size, are apparently alone dependable to serve in distinguishing females of this species. Westwood described a female with an even greater complexity of lobes and lamellae, while Saussure has diagnosed a female more nearly resembling some of the present series.[47]

The male of this species agrees closely with that of *B. jaliscensis* Rehn,[48] differing as follows. Size larger, form proportionately more elongate. Seventh and eighth tergites evenly

[47] Miss. Sci. Mex., Rech. Zool., VI, p. 175, (1870).

[48] Comparison is made with the type, Acad. Nat. Sci. Phila., no. 5147.

convex, not showing weak but distinct longitudinal carinae on each side. Eighth tergite with lateral (ventral) margins very faintly convex, almost straight; not very broadly but distinctly convex. Ninth (ultimate) tergite with surface weakly convex, with a fine medio-longitudinal carina, distad rounded and subbilobate; not truncate, the distal extremity weakly bracket-shaped emarginate with latero-caudal angles deflexed, briefly produced, with apices rounded as in *jaliscensis*. Subgenital opercle deeper, surface more evenly convex, similarly produced ventro-caudad in an acute-angulate projection which is proportionately smaller but shows considerable size variation in the series.

The majority of the females are grayish, the males being darker, often brown with the sides of the head conspicuously white ventrad.

Length of body, ♂ 99 to 131.3, ♀ 142 to 187; length of mesonotum, ♂ 33 to 35.2, ♀ 35.7 to 48; length of metanotum (including median segment), ♂ 20.3 to 24.2, ♀ 27.7 to 29.9; length of median segment, ♂ 9.1 to 11.3, ♀ 10.2 to 12.8; length of cephalic femur, ♂ 33.3 to 37.3, ♀ 30.5 to 40.2; length of caudal femur, ♂ 33.1 to 38, ♀ 32.8 to 40.7; length of operculum, 24 to 29.7 mm.

## Explanation of Plates

### Plate VI

All of the specimens figured in the present paper are from Venvidio, Sinaloa, Mexico.

Fig. 1.—*Prosparatta sinaloae* new species. Male. *Type*. Dorsal view of pygidium and forceps. (× 9)

Fig. 2.—*Prosparatta sinaloae* new species. Male. *Type*. Dorsal view of pygidium. (Greatly enlarged.)

Fig. 3.—*Prosparatta sinaloae* new species. Female. *Allotype*. Dorsal view of pygidium and forceps. (× 9)

Fig. 4.—*Euthlastoblatta grata* new species. Male. *Type*. Ventral view of subgenital plate. (Much enlarged.)

Fig. 5.—*Neoblattella sinaloae* new species. Male. *Type*. Dorsal view of pronotum. (× 6½)

Fig. 6.—*Neoblattella sinaloae* new species. Male. *Type*. Ventral view of subgenital plate. (Same scale as figure 4.)

Fig. 7.—*Ischnoptera bicornuta* new species. Male. *Type*. Dorsal view of pronotum. (× 6½)

Fig. 8.—*Ischnoptera bicornuta* new species. Male. *Type.* Dorsal view of distal portion of abdomen. (Same scale as figure 4.)

Fig. 9.—*Ischnoptera bicornuta* new species. Male. *Type.* Ventral view of subgenital plate. (Same scale as figure 4.)

Fig. 10.—*Cahita nahua* (Saussure). Male. Dorsal view of distal portion of abdomen. (Much enlarged.)

Fig. 11.—*Cahita nahua* (Saussure). Male. Ventral view of subgenital plate. (Same scale as figure 10.)

Fig. 12.—*Cahita nahua* (Saussure). Male. Caudal view of distal portion of subgenital plate. (Same scale as figure 10.)

Fig. 13.—*Nyctibora tetrasticta* new species. Male. *Type.* Dorsal view. (× 2)

Fig. 14.—*Nyctibora tetrasticta* new species. Male. *Type.* Ventral view of subgenital plate. (× 3)

Fig. 15.—*Nyctibora tetrasticta* new species. Female. *Allotype.* Dorsal outline. (× 2)

## Plate VII

Fig. 1.—*Panchlora cahita* new species. Male. *Type.* Ventral view of distal portion of abdomen. (Much enlarged.)

Fig. 2.—*Holocompsa scotaca* new species. Male. *Type.* Dorsal view of pronotum. (× 8)

Fig. 3.—*Holocompsa scotaca* new species. Female. *Paratype.* Dorsal view of pronotum. (× 8)

Fig. 4.—*Holocompsa scotaca* new species. Female. *Allotype.* Dorsal view of pronotum. (× 8)

Fig. 5.—*Holocompsa scotaca* new species. Female. *Paratype.* Dorsal view of pronotum. (× 8)

Fig. 6.—*Caloblatta lampra* new species. Male. *Type.* Dorsal view of pronotum. (× 8)

Fig. 7.—*Caloblatta lampra* new species. Male. *Type.* Ventral view of subgenital plate. (Much enlarged.)

Fig. 8.—*Chorisoneura anisoura* new species. Male. *Type.* Ventral view of subgenital plate. (Much enlarged.)

Fig. 9.—*Stagmomantis colorata* new species. Male. *Type.* Dorsal view of wing. (Natural size.)

Fig. 10.—*Acanthops bidens* new species. Male. *Type.* Ventro-cephalic outline of head. (Much enlarged.)

Fig. 11.—*Acanthops bidens* new species. Male. *Type.* External lateral outline of cephalic femur. (× 2½)

Fig. 12.—*Diapheromera erythropleura* new species. Male. *Type.* Dorsal outline of cercus. (×7)

Fig. 13.—*Diapheromera erythropleura* new species. Male. *Type.* Lateral outline of distal portion of abdomen. (× 5)

Fig. 14.—*Diapheromera erythropleura* new species. Female. *Allotype.* Lateral outline of distal portion of abdomen. (× 5)